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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,346	07/17/2003	Hiroshi Sumi	Q76616	8680
23373	7590	08/29/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			LAM, CATHY FONG FONG	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 08/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

KL

Office Action Summary

LD

Application No.

10/620,346

Applicant(s)

SUMI ET AL.

Examiner

Cathy Lam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 11-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10-28-03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-10, drawn to a wiring board, classified in class 428, subclass 210.
- II. Claims 11-14, drawn to a conductive paste, classified in class 252, subclass 513.
- III. Claim 15, drawn to a method for producing a wiring board, classified in class 156, subclass 89+.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions III and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by a different method such as by slurry coating the conductive paste over the green sheet then oven baking until dried. The process as claimed can be used to make a different product such as a ceramic vase.

3. Inventions II and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the

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particulars of the subcombination as claimed because it can be another materials and/or composition. The subcombination has separate utility such as a paint enamel.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Atty: Abraham Rosner on August 7, 2005 a provisional election was made without traverse to prosecute the invention of group I, claims 1-10. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

7. The abstract of the disclosure is objected to because there are numerous typographical errors. Correction is required. See MPEP § 608.01(b).

Typographical errors occur throughout the body of the specification, applicant is required to make corrections wherever necessary.

Page 3 L1 "substrat", "theref re"; L2 "gen rated"

Page 4 L3 "str ngth"

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Page 5 L2 "conduct r"

Page 10 L1 "mullit"

Page 11 L 2 "t"; L 13 "nuse"; L14 "flit"

Page 14 L 1-2.....etc.

Claim Objections

8. Claim 9 is objected to because of the following informalities: the word "particl" is an error. Appropriate correction is required.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatani et al (US 6096411) in view of Prabhu et al (US 4816615).

Nakatani discloses a printed circuit board comprised of an insulating layer, via holes and a conductive paste.

The conductive paste is filled into the via holes. The conductive paste is comprised of copper particles, liquid epoxy resin (ie. organic vehicle) and insulating particles (col 3 L 4-10).

The insulating particles can be an inorganic material such as metal oxide particles, glass particles or ceramic particles. These particles are exemplified as SiO₂,

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Al₂O₃, CaO and MgO, etc. (col 5 L 23-30). And Al₂O₃, according to the specification, is a non-vitrifiable ceramic particles.

The conductive paste has a resistivity close to $3 \times 10^{-6} \Omega\text{cm}$ (col 10 Table 1 examples 3, 8, 9 and col 13 Table 4 example 28).

Nakatani teaches the composition of the present invention but is silent about the size of the glass and ceramic particles.

Nakatani also does not teach using a ceramic (or green) layer for the insulating layer.

In view of the prior art teaching, one skill in the art would choose the insulating particle size for the conductive paste because it is a matter of design choice. Furthermore, it is well known to use ceramic (or green) layer as insulating layer in printed circuit boards (Prabhu col 5 L 46-50).

Double Patenting

11. Claims 1, 2, 3, 6-10 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2, 6, 15-19 of U.S. Patent No. USPN 6,855,399. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are structurally and materially the same.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Cathy Lam
Primary Examiner
Art Unit 1775

cfl
Aug. 05, 2005